REMARKS

This Application has been carefully reviewed in light of the Final Office Action mailed July 13, 2006 ("*Office Action*"). In the *Office Action*, Claims 1-3, 5-12, 14, and 16-26 are pending in the Application, and the Examiner rejects all pending claims. Applicants amend Claims 1, 11, 16, 18, and 19 to remove unnecessary limitations added by the previous Response (filed April 21, 2006). As described below, Applicants believe all claims to be allowable over the cited references. Therefore, Applicants respectfully request reconsideration and full allowance of all pending claims.

Section 103 Rejections

The Examiner rejects Claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over various combinations of U.S. Patent No. 6,236,664 issued to Erreygers ("*Erreygers*"), U.S. Patent No. 6,088,385 issued to Liu ("*Liu*"), U.S. Patent No. 6,658,049 issued to McGhee et al. ("*McGhee*"), and U.S. Patent No. 4,878,232 issued to Fisher ("*Fisher*"). Applicants respectfully request reconsideration and allowance of Claims 1-3, 5-14, and 16-26 for the following reasons.

A.   The cited references fail to teach or suggest each and every limitation of the claims.

Applicants respectfully maintain that the proposed combinations of references do not disclose, teach, or suggest each and every limitation recited in Applicants' claims. For example, Claim 1, as amended, recites:

> A method for providing greater reach of a DSL signal comprising:
> receiving an incoming DSL signal including a data signal;
> demodulating the data signal;
> requantizing the demodulated data signal by determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation to acquire underlying data in the data signal and transform the data signal into a regenerated form;
> modulating the requantized data signal;
> amplifying the modulated requantized data signal; and
> transmitting the amplified signal in a regenerated form.

Among other aspects, the references fail to teach or suggest: (1) "requantizing the demodulated data signal" and "modulating the requantized data signal," and (2) "requantizing the demodulated data signal by determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation and transform the data signal into a regenerated form."

1. The references fail to teach or suggest both "requantizing the demodulated data signal" and "modulating the requantized data signal," as required by Claim 1.

First, Applicants respectfully submit that the references, whether taken alone or in combination, fail to teach or suggest "requantizing the demodulated data signal" and "modulating the requantized data signal," as required by Claim 1. As teaching these claimed aspects, the *Office Action* relies on the proposed *Erreygers-Liu* combination. (*Office Action*, pages 2-4).

In general, *Erreygers* discloses a repeater that "provides an efficient way to implement ADSL over long distances." (*Erreygers*, Abstract). The repeater unit includes high pass filters 56, 58, low pass filters 52, 54, and an ADSL repeater 60, which includes ADSL transceivers 62, 64. (*Id.*, Figure 2). *Erreygers*'s ADSL transceiver 62 "receives ADSL signals from high pass filter 56, amplifies the received ADSL signals, and sends the amplified ADSL signals to ADSL transceiver 64 for forwarding to high pass filter 58." (*Id.*, col. 5, ll. 42-59). Thus, while *Erreygers* may teach a repeater for implementing ADSL over long distances, *Erreygers* does not teach or suggest either "requantizing the demodulated data signal" or "modulating the requantized data signal," as required by Claim 1.

Applicants respectfully submit that *Liu* also fails to teach or suggest these claimed aspects. *Liu* generally teaches an ADSL transceiver that is able to scale down a data transmission rate in a DMT modulated ADSL channel. (*Liu*, Abstract; *id.*, col. 2, ll. 62-65). *Liu*'s transceiver can separately scale the transmit rate and the receive rate. (*Id.*, col. 3, ll. 29-37). The Control and Application Interface 245 connects the two branches: the receiving branch and the transmitting branch. (*Id.*, Figure 2). *Liu*'s "Control logic 245 permits the system to behave essentially like a conventional analog modem." (*Id.*, col. 8, ll. 13-16). In the receiving branch, a received signal is filtered, sampled, and buffered by Filter and

Analog/Digital Converter 280 and Buffer 270. (*Id.*, col. 6, ll. 17-26). The signal is then passed to DMT Receiver Core 260, which "is responsible for extracting the original data stream." (*Id.*, col. 6, ll. 34-36). In the transmitting branch, the ADSL transceiver transmits a signal using the DAC 230 and buffer 240 of the front end transmitting circuit, which can have a different scaling factor than the receiving circuit. (*Id.*, col. 7, ll. 5-8). "[S]ymbols are generated by DMT Tx Core 250, [and] they are stored in Buffer 240 and then converted to analog wave forms by DAC 230." (*Id.*, col. 7, ll. 18-21).

However, Applicants respectfully submit that *Liu* fails to teach or suggest both "requantizing the demodulated data signal" and "modulating the requantized data signal," as required by Claim 1. (emphasis added). Even assuming, for the sake of argument, that *Liu* discloses requantizing the demodulated data signal in the receiving branch and modulating outbound symbols in the transmitting branch, *Liu* still fails to teach or suggest modulating the requantized data signal. Accordingly, Applicants respectfully submit that *Liu* fails to teach or suggest both "requantizing the demodulated data signal" and "modulating the requantized data signal," as required by Claim 1. *Erreygers*, which does not teach or suggest either "requantizing the demodulated data signal" or "modulating the requantized data signal," fails to remedy the deficiencies of *Liu*. For at least this reason, Applicants respectfully request reconsideration and allowance of Claims 1-3, 5-12, and 14-26.

2.   **The references fail to teach or suggest the specific aspects required by Applicants' "requantizing ..." step in Claim 1.**

As disclosing Applicants' step of "requantizing," the *Office Action* relies on the proposed *Erreygers-Liu* combination, and specifically *Liu*. (*Office Action*, pages 2-4).

Applicants appreciate the Examiner's consideration of and response to Applicants' previously submitted arguments. In response to the argument presented in the *Office Action*, Applicants more fully explain why the proposed *Erreygers-Liu* combination does not disclose, teach, or suggest "requantizing the demodulated data signal by determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation and transform the data signal into a regenerated form," as recited in Claim 1.

As teaching these claimed aspects, the *Office Action* points to *Liu*'s ADC 280 and DMT Core 260, stating:

> The received data is requantized first by ADC 280 (Fig.2), then demodulated by DMT core 260. The act of demodulating the signal comprises the step of requantizing the data to recover original data stream 201 (the original data is demodulated by comparing the received signal to a true value constellation, removing the carrier signals and making a judgment with each received data bit to the known true value constellation, then using the judgment to assign the recognized original data bit into another true value constellation where the original data stream is communicated to the rest of the system, for example, if the signaling is in binary, the data bits will be assigned (requantized) to either a '1' or a '0'.

(*Office Action*, p. 3). Applicants respectfully disagree. With regard to *Liu*'s ADC 280 and DMT Core 260, *Liu* simply states:

> The full bandwidth signal is bandpass limited to a frequency width B by suitable, well-known techniques as it passes through bandpass Filter and Analog/Digital Converter 280. The received DMT signal is sampled (using any of a number of well-known techniques) and buffered in Buffer 270, which, in a preferred embodiment, is a FIFO.
>
> *   *   *
>
> DMT Receiver Core 260 is responsible for extracting the original data stream from the numerous sub-carriers within any specific received DMT symbol block.

(*Liu*, col. 6, lines 17-22; *id.*, col. 6, lines 34-36). *Liu*'s disclosure that the "received DMT signal is sampled . . . and buffered" and that the "DMT Receiver Core 260 is responsible for extracting the original data steam" fails to teach or suggest, expressly or inherently, the specific aspects recited in Applicants' claims. Even assuming, for the sake of argument, that *Liu*'s devices could be modified to incorporate these specific aspects, *Liu* still fails to actually disclose, teach, or even suggest aspects of Applicants' claims, *e.g.*, "requantizing the demodulated data signal by determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation." (Claim 1; emphasis added). For at least this reason, Applicants respectfully request reconsideration and allowance of Claims 1-3, 5-12, and 14-26.

3.   **The references fail to teach or suggest elements of Claims 2-3, 5-12, 14, and 16-26.**

Independent Claims 11, 16, 18, and 19 recite certain features that are analogous to those discussed above. For example, Claim 11 recites "requantizing the demodulated data portion by determining a constellation associated with each bit of data in the modulated data portion and resetting the value of that bit to the value of the constellation to acquire underlying data in the data portion and transform the data portion into a regenerated form." As another example, Claim 16 recites "a means for requantizing the demodulated data portion by determining a constellation associated with each bit of data in the modulated data portion and resetting the value of that bit to the value of the constellation and transform the data portion into a regenerated form." Claim 18 recites "a means for requantizing the demodulated data signal by determining a constellation associated with each bit of data in the modulated data signal and resetting the value of that bit to the value of the constellation and transform the data signal into a regenerated form." As still another example, Claim 19 recites "the first conditioning circuit being operable to . . . demodulate, requantize, and remodulate the first data signal to produce a first remodulated data signal, the first data signal requantized by determining a constellation associated with each bit of data in the modulated first data signal and resetting the value of that bit to the value of the constellation to acquire underlying data in the first data signal and transform the first data signal into a regenerated form." Claim 19 also recites "the second conditioning circuit being operable to . . . demodulate, requantize, and remodulate the second data signal to produce a second remodulated data signal, the second data signal requantized by determining a constellation associated with each bit of data in the modulated second data signal and resetting the value of that bit to the value of the constellation to acquire underlying data in the second data signal and transform the second data signal into a regenerated form." Accordingly, for reasons similar to those discussed above with regard to Claim 1, Applicants respectfully submit that the cited references do not disclose, teach, or suggest each and every limitation of Applicants' Claims 11, 16, 18, and 19.

Dependent Claims 2-3 and 5-10, 12 and 14-15, 17, and 20-26 depend from independent Claims 1, 11, 16, and 19 respectively. Since Claims 2-3, 5-10, 12, 14-15, 17, and 20-26 incorporate the limitations of their respective independent claims, which

Applicants have shown above to be allowable, Claims 2-3, 5-10, 12, 14-15, 17, and 20-26 are allowable for at least this reason. Additionally, Applicants respectfully submit that Claims 2-3, 5-10, 12, 14-15, 17, and 20-26 also recite features that are not disclosed, taught, or suggested in the cited references. Because Applicants have shown the independent claims to be allowable, however, Applicants have not provided detailed arguments with respect to Claims 2-3, 5-10, 12, 14-15, 17, and 20-26. Applicants remain ready to do so if it becomes appropriate.

For at least these reasons, Applicants respectfully request reconsideration and allowance of Claims 1-3, 5-12, and 14-26.

B.   The Proposed Combinations of References are Improper

Applicants appreciate the Examiner's consideration of and response to Applicants' previously submitted arguments. In response, Applicants more fully explain why the proposed combinations of references are improper because it would not have been obvious to one skilled in the art to make the proposed combinations.

With regard to Applicants' arguments regarding the lack of motivation to combine *Liu* and *Erreygers*, the *Office Action* states:

> [E]xaminer contends that providing more flexible transceivers (the adaptive data rate transceiver taught by Liu) in the ADSL repeater taught by Erreygers (as mentioned in the previous office action) is a valid motivation to combine the references.

(*Office Action*, page 10). The *Office Action* makes similar arguments in response to the lack of motivation to combine *Liu* and *Erreygers* with *McGhee* and *Fisher*. (*Id.*) While the *Office Action* has essentially stated that the motivation is provided because the teachings of one reference may improve the teachings of another reference, the *Office Action* fails to point to any <u>evidence</u> sufficient to show a *prima facie* case of obviousness.

As the Examiner is well aware, the M.P.E.P. sets forth a strict legal standard for combining references. According to the M.P.E.P., "The mere fact that references <u>can</u> be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." M.P.E.P. § 2143.01 (emphasis in original). "Obviousness can only be established by combining or modifying the teachings of the prior

art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art" at the time of the invention. *Id.* The *Office Action*, however, fails to identify this required evidence.

Governing Federal Circuit case law makes this strict legal standard even clearer. According to the Federal Circuit, "a showing of a suggestion, teaching, or motivation . . . is an 'essential component of an obviousness holding.'" *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25 (Fed. Cir. 2000) (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352 (Fed. Cir. 1998)). Furthermore, while "evidence of a suggestion, teaching, or motivation . . . may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, the nature of the problem to be solved, ... [t]he range of sources available . . . does not diminish the requirement for actual evidence." *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999) (emphasis added). Thus, it is a factual question that cannot be resolved on subjective belief and unknown authority, but must be based on objective evidence of record. *See In re Lee*, 277 F.3d 1338, 1343-44 (Fed. Cir. 2002).

Accordingly, Applicants respectfully submit that the proposed *Erreygers-Liu*, *Erreygers-Liu-McGhee*, *Erreygers-Liu-Fisher*, and *Erreygers-Liu-McGhee-Fisher* combinations are improper and should not be used here to reject Applicants' claims.

For at least these reasons, Applicants respectfully request reconsideration and allowance of Claims 1-3, 5-12, and 14-26.
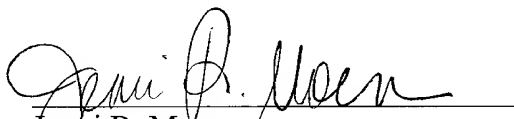
CONCLUSION

Applicants have made an earnest attempt to place this case in condition for allowance. For the foregoing reasons, and for other reasons clearly apparent, Applicants respectfully request full allowance of all pending claims.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Jenni R. Moen, Attorney for Applicants, at the Examiner's convenience at (214) 953-6809.

Applicants believe that no fee is due, however, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicants

Jenni R. Moen
Reg. No. 52,038

Date: September 13, 2006

Correspondence Address:

at Customer No.   **05073**